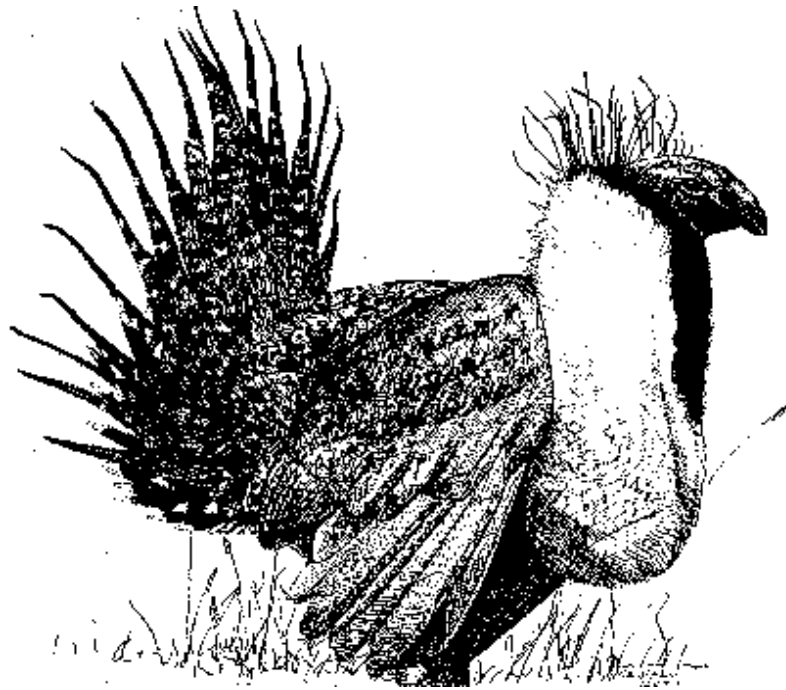


# **SAGE-GROUSE IN UTAH**



**UTAH DIVISION OF WILDLIFE  
RESOURCES**

9 NOVEMBER 2001

## DISTRIBUTION AND STATUS OF SAGE-GROUSE IN UTAH

### DISTRIBUTION

#### Historical Distribution

Early pioneer journals suggest that sage-grouse were abundant in the early 1800s in Utah. It was mentioned by early pioneers that wherever there was sagebrush (*Artemisia tridentata*) there were sage-grouse (Utah Fish and Game 1950, Beck and Mitchell 1997). Historically, it is thought all 29 counties in Utah provided adequate habitat for sage-grouse. In general, sage-grouse were found from 4,000 to over 9,000 feet in elevation in mainly the Great Basin and the Colorado Plateau geographic regions. Recent research indicates that there are two species of sage-grouse found in Utah, the Greater Sage-Grouse (*Centrocercus urophasianus*) and the Gunnison Sage-Grouse (*Centrocercus minimus*) (Young et al. 1994). A map showing the historic range of sage-grouse in Utah is shown in Figure 1. This map was developed in a geographic information system (GIS) using published historical sagebrush distribution maps (Beetle 1960), historic accounts of sage-grouse from early settlers and explorers (Utah Fish and Game 1950), and known current sage-grouse distribution.

#### Current Distribution

It is estimated that Greater Sage-Grouse occupy only 41.4 percent, and Gunnison Sage-Grouse occupy only 30.7 percent, of the habitat they once did (Beck et al. *in press*). Habitat loss, fragmentation and degradation are suspected as the main causes of population decline. Large fragments of sage-grouse habitat have been lost throughout Utah to a variety of developments that eliminate sagebrush. Thousands of acres of sage-grouse habitat have been converted into dense stands of exotic cheat grass (*Bromus tectorum*) by wildfire and are now unsuitable for sage-grouse. Intensive domestic livestock overgrazing is also suspected as contributing to the degradation of sage-grouse habitat (Beck and Mitchell 2000).

Currently, sage-grouse are found in 26 counties with active leks counted in 20 counties. Sage-grouse have been extirpated in Davis, Salt Lake, and Washington counties. The largest populations are found in western Box Elder County, Rich County, Blue and Diamond Mountains (Uintah County), and on the Parker Mountain (Wayne County). Other smaller populations are found scattered in the central and southern parts of the state (Figure 1).

Gunnison Sage-Grouse are found south and east of the Colorado River in southeastern Utah and Greater Sage-Grouse are found throughout the rest of the state (Figure 1). A small population of Greater Sage-Grouse are found on Hatch Point south and east of the Colorado River as a result of a transplant in the early 1970s. Grouse have not been seen on the lek since 1996 when only one male was observed

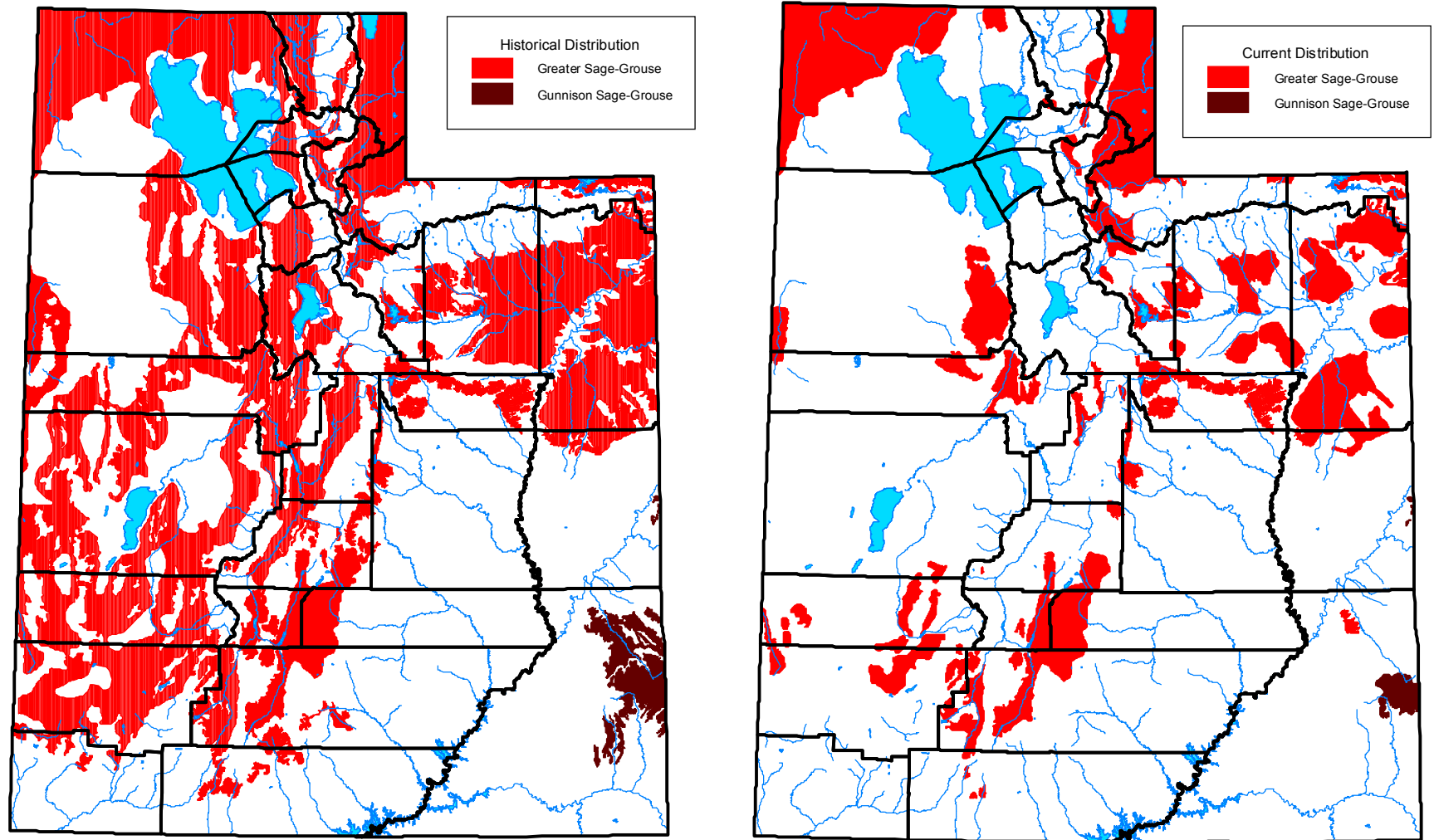


Figure 1. Historical and Current Distribution of Sage-Grouse in Utah.

## **POPULATION STATUS**

In 2001, a total of 165 strutting grounds were counted throughout Utah. A total of 3,250 males were counted on these grounds (Appendix 1). Average number of males per ground was 19.7 in 2001 and 21.0 in 2000 (Figure 2). The long-term (1967-2000) average number of males per ground was 18.2 and the ten-year (1991-2000) average number of males per ground was 14.7. In 2001, Utah's estimated sage-grouse breeding population consisted of 12,999 birds. This estimate is based on the assumption that 75 percent of all males were counted on strutting grounds and that the male:female ratio in the population is 1:2 (Appendix 1).

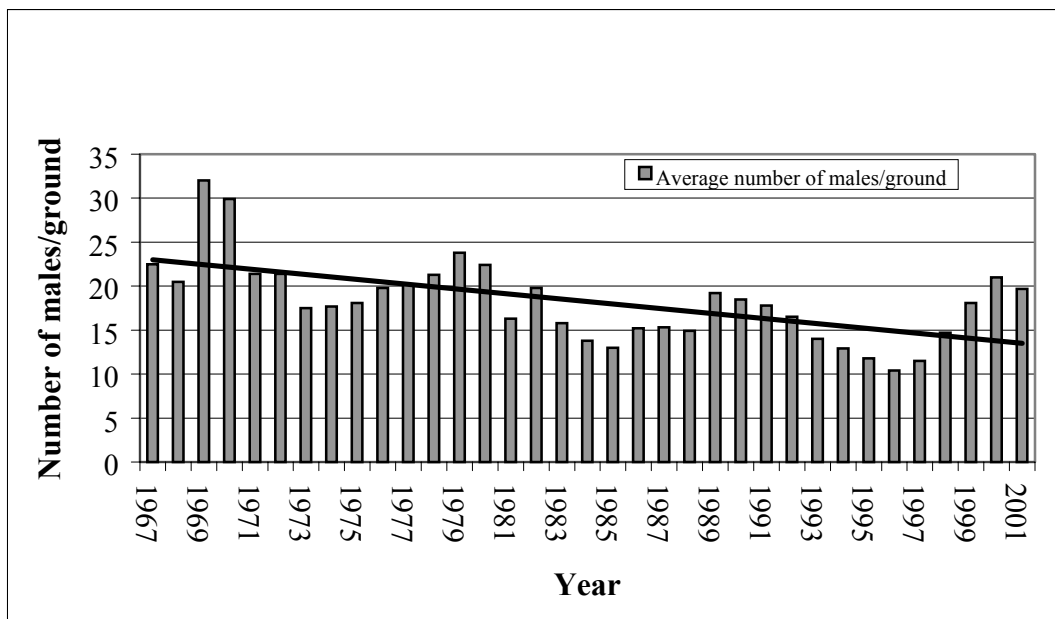


Figure 2. Average number of males/strutting ground.

Based on wing data from harvested birds, sage-grouse production in 2000 was up 6 percent from 1999 and up 10 percent from the long-term average (1973-1999). Juveniles per 100 hens was 264 in 1999 and the long-term (1973-1998) average was 241 (Figure 3).

In 2001, leks were counted in 20 of Utah's 29 counties. Populations are considered to be secure (greater than 500 breeding birds) in only six counties: Box Elder, Carbon, Garfield, Rich, Wayne, and Uintah.

In San Juan County, the Gunnison Sage-Grouse breeding population was estimated at 188 birds in 2001 with five active leks (Appendix 1).

## **HUNTING**

In 2001, four areas of Utah were open to hunting of sage-grouse: 1) western Box Elder County (9-day season) and 2) all of Rich County (7-day season) in northern Utah; 3) Blue and Diamond Mountains (9-day season) in northeastern Utah and 4) Parker Mountain (7-day season) in south-

central Utah (Figure 4). Daily bag and possession limits were 1 and 2 respectively. Utah's 2001 sage-grouse season opened on the third Saturday in September (9/15/2001). Harvest statistics for the 2000 sage-grouse hunt are depicted in Table 1.

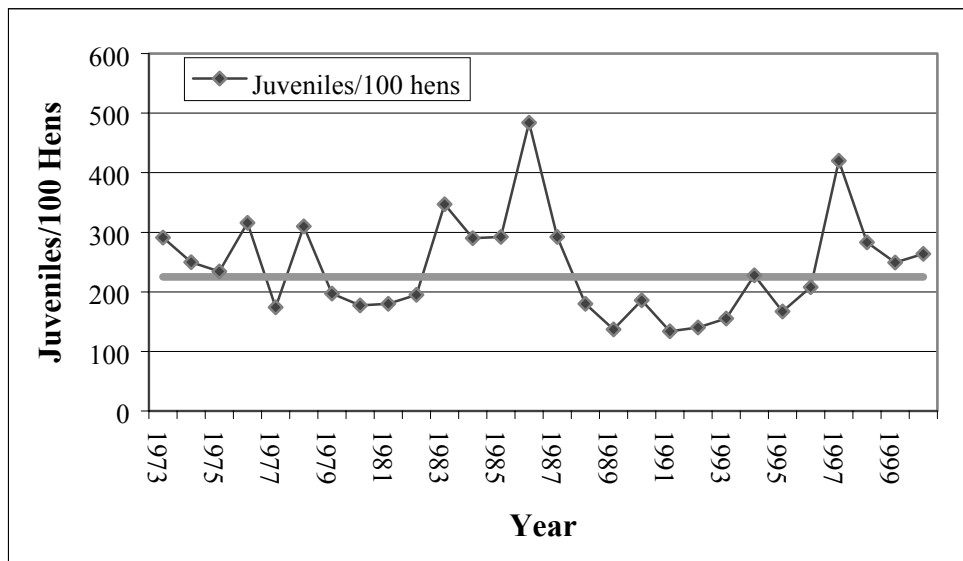


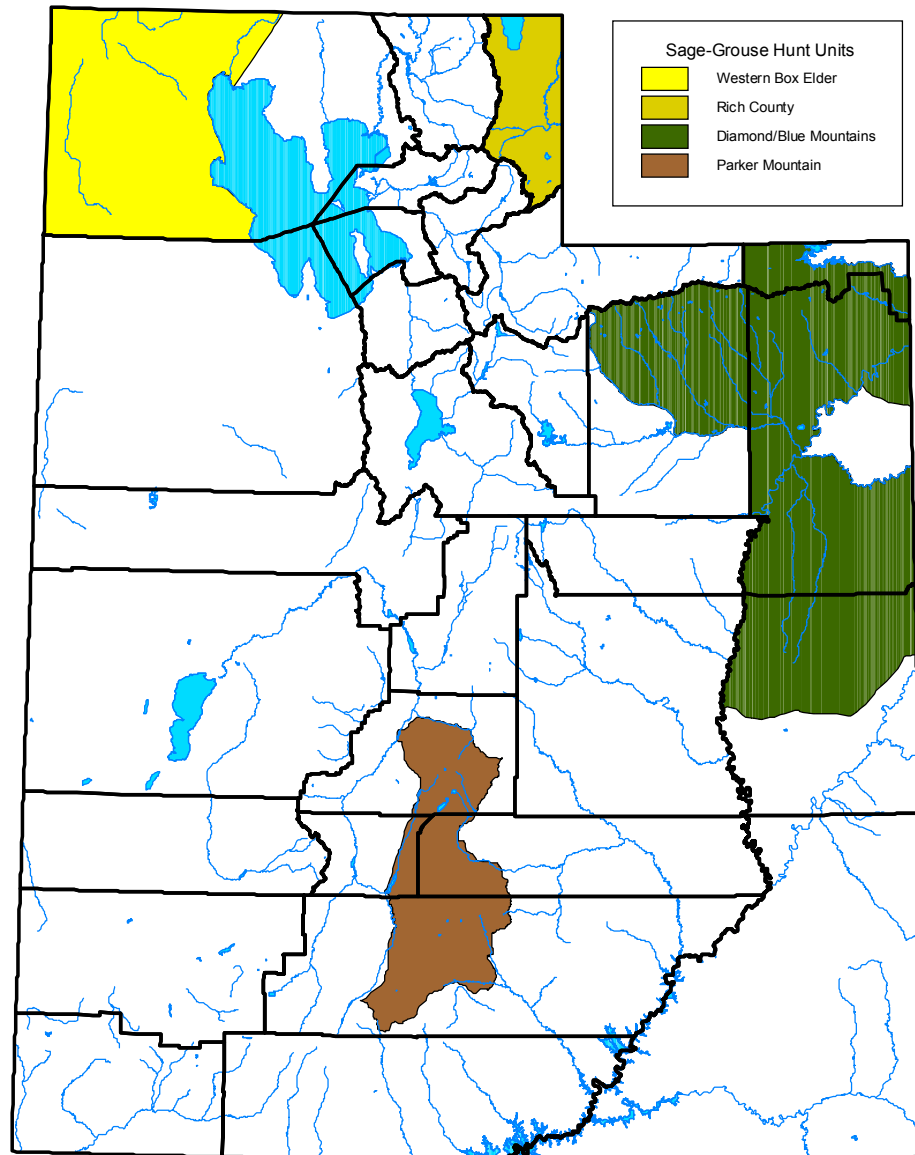
Figure 3. Juvenile sage-grouse/100 hens based on analysis of wings from harvested grouse (1973-2000). The horizontal line represents the level needed to sustain a population (225 juvenile sage-grouse/100 hens).

Table 1. Sage-grouse harvest statistics for 2000

Sage-Grouse Harvest Statistics for 2000	
Statistic	Number
Hunters Afield	1,455
Sage-Grouse Harvested	1,498
Hunter-days Afield	2,829
Sage-Grouse per Hunter-day	0.53
Sage-Grouse per Hunter	1.03

Utah sage-grouse populations are hunted only in areas where there is a three-year running average of at least 500 breeding birds (Appendix 2).

There appears to be a significant drop in sage-grouse hunters and the number of sage-grouse harvested in 2000 from 1999. Beginning in fall of 2000, a free permit was required to hunt sage-grouse in Utah. This probably accounted for the decreased hunter participation and harvest as the permit provides for the collection of more accurate and precise harvest data.



### Season Lengths and Bag Limits

Western Box Elder County  
9 Day Season  
1/2 Bag/Possession Limit

Rich County  
7 Day Season  
1/2 Bag/Possession Limit

Blue/Diamond Mountains  
9 Day Season  
1/2 Bag/Possession Limit

Parker Mountain  
7 Day Season  
1/2 Bag/Possession Limit

Figure 4. 2001 Utah Sage-Grouse Hunt Units.

## **CURRENT RESEARCH EFFORTS**

Several major and minor scientific research projects are underway on various sage-grouse populations in Utah.

### **Wayne County - Parker Mountain - Greater Sage-Grouse (began 1998)**

On Parker Mountain in south-central Utah (Wayne County), baseline data is being collected on sage-grouse habitat use preferences and population dynamics. Baseline data will be compared to a study conducted in the same area in the early 1970s to determine changes in habitat preferences and population dynamics. Baseline data will also be used to direct habitat protection and enhancement efforts. Habitat experiments are underway to assess the effectiveness of using the Dixie Harrow, Lawson Pasture Aerator and Tebuthiuron to increase the abundance and diversity of the herbaceous understory within the sagebrush community.

### **Wasatch County - Strawberry Reservoir Valley - Greater Sage-Grouse (began in 1998)**

In the Strawberry Reservoir Valley area of Wasatch County, efforts are underway to understand habitat use preferences of sage-grouse and to learn more about population dynamics. The Strawberry Valley sage-grouse population is a migratory population. Grouse migrate some 10-20 miles to the east to winter each year. This population is not hunted and based on GIS data for the area habitat seems to be adequate for birds. However, over the past 11 years, the grouse population has not increased or decreased as expected. Research in this area will help to answer some of these questions. Baseline data will also be used to direct habitat protection and enhancement efforts. Habitat experiments are underway to alter a smooth brome grass-dominated understory.

### **San Juan County - Gunnison Sage- Grouse (began in 2001)**

Efforts are underway to locate and identify active strutting grounds, nesting, brood-rearing and wintering habitats. A population dynamics assessment (nesting success, survival, recruitment) is also being conducted. Efforts to understand grouse use of Conservation Reserve Program and Wildlife Habitat Incentive Program lands is being administered.

### **Other Utah Sage-Grouse Research Efforts:**

#### **Carbon County - Emma and Whitmore Parks - Greater Sage-Grouse (began 2000)**

A telemetry study is being conducted in this area to understand the effects of coalbed methane extraction on the existing sage-grouse population. Birds movements and population dynamics are being assessed throughout the year. Some of these birds will likely be transplanted out of this area as the coalbed methane extraction fields reach full operational status.

#### **Duchesne County - Anthro Mountain - Greater Sage-Grouse (will begin in 2001)**

A baseline telemetry study will be conducted in this area of central-eastern Utah to understand specific habitat area uses and preferences by sage-grouse. Data will be used to administer natural gas and oil extraction projects proposed in the area.

#### **Kane County - Alton-Sink Valley - Greater Sage-Grouse (will begin in 2001)**

A baseline telemetry study will be conducted in this area of central-southern Utah to understand specific habitat area uses and preferences by sage-grouse. Data will be used to guide future

habitat protection and enhancement efforts.

Utah sage-grouse GIS data can be obtained through the Utah Division of Wildlife Resources Web Page at: <http://www.utahcdc.usu.edu/ucdc/DownloadGIS/disclaim.htm> and <http://www.utahcdc.usu.edu/ucdc/>

Utah range trend data can be obtained through the Utah Division of Wildlife Resources Web Page at: <http://ag.utah.gov/mktcons/rangeland/range.htm>

## **CONSERVATION PLANNING EFFORTS**

### **Statewide Working Group**

A statewide Utah Sage-Grouse Working Group was established in 1998 primarily to initiate and maintain a dialog and cooperative working relationship between agencies and interested parties pertaining to all aspects of sage-grouse and their management.

The statewide working group has compiled a draft statewide sage-grouse conservation plan that divides Utah into 13 sage-grouse management units. Local working groups will be established in each of the 13 management units. Local working groups will develop specific, local, community-based conservation plans for sage-grouse populations within their respective units.

A Community-based Conservation Extension Specialist has been hired by the Utah Division of Wildlife Resources and Utah State University. The Community-based Conservation Extension Specialist is responsible for establishing and facilitating all local working groups. To date, local working groups have been established in the following sage-grouse management units: Box Elder (2001), Parker Mountain/Johns Valley (1998), South-Central Valleys (2001) and San Juan (1996).

We hope to have local working groups established in the following additional sage-grouse management units by the end of 2001: Rich/Summit, Strawberry Valley and Book Cliffs/Uintah Basin.

Further information on Utah sage-grouse conservation planning efforts can be found on the Utah Division of Wildlife Resources Upland Game Web Page at: <http://www.wildlife.utah.gov/upland.htm#Anchor-199-31531>



## LITERATURE CITED

- Beck, J. L., D. L. Mitchell, and B. D. Maxfield. In Press. Distribution and status of sage-grouse in Utah, 1959-2000. *Western North American Naturalist*: In Press.
- Beck, J. L., and D. L. Mitchell. 2000. Influences of livestock grazing on sage grouse habitat. *Wildlife Society Bulletin* 28:993-1002.
- Beck, J. L., and D. L. Mitchell. 1997. Brief guidelines for maintaining and enhancing sage grouse habitat on private lands in Utah. Utah technical notes: UT190-7-3. U.S. Natural Resources Conservation Service, Salt Lake City, Utah.
- Beetle, A. A. 1960. A study of sagebrush: The section *Tridentatae* of *Artemisia*. *Ag. Exper. Sta. Bull.* 368. Univ. Wyoming, WY.
- Utah Fish and Game. 1950. Stories of old timers. *Utah Fish and Game Bulletin*. April/May.
- Young, J. R., J. W. Hupp, J. W. Bradbury, and C. E. Braun. 1994. Phenotypic divergence of secondary sexual traits among sage grouse, *Centrocercus urophasianus*, populations. *Animal Behavior*. 47:1353-1362.

Compiled by:

Dean L. Mitchell  
Upland Game Program Coordinator  
Utah Division of Wildlife Resources  
1594 West North Temple  
Suite 2110, Box 146301  
Salt Lake City, Utah 84114-6301  
801-538-4786  
FAX 801-538-4709  
E-mail: [nrdwr.dmitchel@state.ut.us](mailto:nrdwr.dmitchel@state.ut.us)  
UPLAND GAME WEB PAGE:  
<http://www.wildlife.utah.gov/upland.htm>

Brian D Maxfield  
Wildlife Biologist  
Utah Division of Wildlife Resources  
1594 West North Temple  
Suite 2110, Box 146301  
Salt Lake City, Utah 84114-6301  
801-538-4805  
FAX 801-538-4709  
E-mail: [nrdwr.bmaxfiel@state.ut.us](mailto:nrdwr.bmaxfiel@state.ut.us)

Appendix 1. 2001 Sage-grouse breeding population estimates based on strutting ground counts.

SAGE-GROUSE BREEDING POPULATION ESTIMATES BASED ON STRUTTING GROUND COUNTS, 2001*					
COUNTY	NO. OF LEKS	MALES COUNTED	TOTAL MALES**	TOTAL FEMALES	TOTAL ADULTS
Box Elder	26	470	627	1,253	1,880
Cache	2	29	39	77	116
Weber					
Davis					
Morgan	2	39	52	104	156
Rich	29	840	1120	2,240	3,360
Summit	3	1	1	3	4
Juab	3	35	47	93	140
Salt Lake					
Utah					
Sanpete					
Tooele	2	83	111	221	332
Wasatch	3	39	52	104	156
Beaver	7	94	125	251	376
Garfield	14	306	408	816	1,224
Iron	6	86	115	229	344
Kane	2	17	23	45	68
Millard					
Piute	1	61	81	163	244
Sevier	1	11	15	29	44
Washington					
Wayne	16	560	747	1,493	2,240
Daggett	7	88	117	234	351
Duchesne	2	55	73	147	220
Uintah	20	258	344	688	1,032
Carbon	12	131	175	349	524
Grand					
Emery	2	0	0	0	0
San Juan	5	47	63	125	188
<b>TOTAL</b>	<b>165</b>	<b>3,250</b>	<b>4,333</b>	<b>8,693</b>	<b>12,999</b>
Average number of males/lek = 19.7					
Fall Sage-Grouse population estimate = 22,996 (2.3 chicks per hen @ 50% nest success)					

\*Willis, M. J., G. P. Keister, D. A. Immel, D. M. Jones, R. M. Powell, and K. R. Durbin. 1993. Sage Grouse in Oregon. Or. Dept. Fish and Wildl. Wildl. Research. Rpt. No.15. 70pp.

\*\*Based on 75% of males attending lek.

Appendix 2. Summary of maximum number of sage-grouse males counted per county, 1992-2001.

**Sage-Grouse Lek Count Summary**  
**Maximum Males Counted Per County, 1992-2001**

County	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	Average (last 3 years)
Box Elder	307	250	220	191	239	318	422	452	516	470	479
Cache			9	9	6	23	23	23	21	29	24
Weber											
Davis											
Morgan	39	21	15	24	25	34	56	81	84	39	68
Rich	372	275	334	267	283	353	373	559	897	840	765
Summit				3					1	1	1
Juab	57		1		8	18	1	13	40	35	29
Salt Lake											
Sanpete											
Tooele	48				9	18	23	80	103	83	89
Utah											
Wasatch	66	9	24		39	51	48	59	41	39	46
Beaver	21	49	57	41	48	43	22	96	68	94	86
Garfield		77	145	139	115	126	254	245	324	306	292
Iron		12	39	34	21	19	26	98	99	86	94
Kane		1	1	1	0	4	18	20	11	17	16
Millard						0					
Piute				23	29	34	33	67	63	61	64
Sevier		0	11	12	20		15	11	14	11	12
Washington											
Wayne	289	196	163	206	207	258	257	499	472	560	510
Daggett	17	14	11		32	23	25	19	84	88	64
Duchesne	109	77	37		22	16	24	46	57	55	53
Uintah	290	173	225	8	270	278	382	368	363	258	330
Carbon		14	3		26	30	54	65	201	131	132
Grand											
Emery		3	5	0	0	0			0	0	0
San Juan	40	44	41	41	29	25	32	46	57	47	50
Totals	1,655	1,215	1,341	999	1,428	1,671	2,088	2,847	3,516	3,250	3,204